

Title (en)

HETEROCYCLIC SPIRO COMPOUNDS

Title (de)

HETEROCYCLISCHE SPIROVERBINDUNGEN

Title (fr)

COMPOSÉS SPIRANIQUES HÉTÉROCYCLIQUES

Publication

EP 3708634 A1 20200916 (DE)

Application

EP 20165606 A 20141121

Priority

- EP 13005938 A 20131219
- EP 14801936 A 20141121
- EP 2014003120 W 20141121

Abstract (en)

[origin: WO2015090504A2] The present invention relates to spiro compounds having electron-conducting groups and to electronic devices, in particular organic electroluminescent devices, containing said compounds.

Abstract (de)

Die vorliegende Erfindung betrifft Spiroverbindungen mit elektronenleitenden Gruppen sowie elektronische Vorrichtungen, insbesondere organische Elektrolumineszenzvorrichtungen, enthaltend diese Verbindungen.

IPC 8 full level

C09K 11/06 (2006.01); **H01L 51/00** (2006.01)

CPC (source: CN EP KR US)

C07D 307/94 (2013.01 - CN EP KR US); **C07D 405/04** (2013.01 - CN EP KR US); **C07D 405/10** (2013.01 - CN EP KR US);
C07D 409/04 (2013.01 - CN EP US); **C07F 5/025** (2013.01 - CN EP US); **C07F 9/65517** (2013.01 - CN EP KR US);
C07F 15/0033 (2013.01 - CN EP US); **C07F 15/0086** (2013.01 - CN EP US); **C09K 11/025** (2013.01 - EP US); **C09K 11/06** (2013.01 - CN EP US);
H10K 50/16 (2023.02 - KR); **H10K 50/171** (2023.02 - KR); **H10K 50/18** (2023.02 - KR); **H10K 85/615** (2023.02 - US);
H10K 85/624 (2023.02 - EP US); **H10K 85/654** (2023.02 - KR US); **H10K 85/6572** (2023.02 - US); **H10K 85/6574** (2023.02 - KR US);
H10K 85/6576 (2023.02 - US); **C09K 2211/1007** (2013.01 - CN EP US); **C09K 2211/1011** (2013.01 - CN EP US);
C09K 2211/1029 (2013.01 - CN EP US); **C09K 2211/1044** (2013.01 - CN EP US); **C09K 2211/1059** (2013.01 - CN EP US);
C09K 2211/1088 (2013.01 - CN EP US); **C09K 2211/1092** (2013.01 - CN EP US); **H10K 50/11** (2023.02 - CN EP US); **H10K 50/16** (2023.02 - US);
H10K 50/165 (2023.02 - CN EP US); **H10K 85/624** (2023.02 - CN); **Y02E 10/549** (2013.01 - EP US)

Citation (applicant)

- WO 9013148 A1 19901101 - CAMBRIDGE RES & INNOVATION [GB], et al
- WO 2013100464 A1 20130704 - CHEIL IND INC [KR]
- EP 0842208 A1 19980520 - DOW CHEMICAL CO [US]
- WO 0022026 A1 20000420 - AXIVA GMBH [DE], et al
- EP 0707020 A2 19960417 - HOECHST AG [DE]
- EP 0894107 A1 19990203 - HOECHST RES & TECH GMBH & CO [DE]
- WO 2006061181 A1 20060615 - MERCK PATENT GMBH [DE], et al
- WO 9218552 A1 19921029 - WACKER CHEMIE GMBH [DE]
- WO 2004070772 A2 20040819 - COVION ORGANIC SEMICONDUCTORS [DE], et al
- WO 2004113468 A1 20041229 - COVION ORGANIC SEMICONDUCTORS [DE], et al
- EP 1028136 A2 20000816 - UNIV CARNEGIE MELLON [US]
- WO 2005014689 A2 20050217 - COVION ORGANIC SEMICONDUCTORS [DE], et al
- WO 2004041901 A1 20040521 - COVION ORGANIC SEMICONDUCTORS [DE], et al
- WO 2004113412 A2 20041229 - COVION ORGANIC SEMICONDUCTORS [DE], et al
- WO 2005040302 A1 20050506 - COVION ORGANIC SEMICONDUCTORS [DE], et al
- WO 2005104264 A1 20051103 - COVION ORGANIC SEMICONDUCTORS [DE], et al
- WO 2007017066 A1 20070215 - MERCK PATENT GMBH [DE], et al
- WO 2005086251 A2 20050915 - NOVALED GMBH [DE], et al
- WO 2012175535 A1 20121227 - NOVALED AG [DE], et al
- WO 2012175219 A1 20121227 - NOVALED AG [DE], et al
- WO 2012168358 A1 20121213 - NOVALED AG [DE], et al
- WO 2012031735 A1 20120315 - NOVALED AG [DE], et al
- EP 1837926 A1 20070926 - NOVALED AG [DE]
- WO 2007107306 A1 20070927 - NOVALED AG [DE], et al
- EP 2452946 A1 20120516 - NOVALED AG [DE]
- EP 2463927 A1 20120613 - NOVALED AG [DE]
- WO 2009000237 A1 20081231 - NOVALED AG [DE], et al
- US 2007145355 A1 20070628 - WERNER ANSGAR [DE], et al
- US 7294849 B2 20071113 - THOMPSON MARK E [US], et al
- WO 0070655 A2 20001123 - UNIV PRINCETON [US], et al
- WO 0141512 A1 20010607 - UNIV PRINCETON [US], et al
- WO 0202714 A2 20020110 - DU PONT [US], et al
- WO 0215645 A1 20020221 - UNIV PRINCETON [US], et al
- EP 1191613 A2 20020327 - CANON KK [JP]
- EP 1191612 A2 20020327 - CANON KK [JP]
- EP 1191614 A2 20020327 - CANON KK [JP]
- WO 2005033244 A1 20050414 - COVION ORGANIC SEMICONDUCTORS [DE], et al
- WO 2005019373 A2 20050303 - BASF AG [DE], et al
- US 2005258742 A1 20051124 - TSAI YUI-YI [US], et al
- WO 2005011013 A1 20050203 - COVION ORGANIC SEMICONDUCTORS [DE], et al
- WO 2004013080 A1 20040212 - UNIV ROMA [IT], et al

- WO 2004093207 A2 20041028 - COVION ORGANIC SEMICONDUCTORS [DE], et al
- WO 2006005627 A1 20060119 - COVION ORGANIC SEMICONDUCTORS [DE], et al
- WO 2010006680 A1 20100121 - MERCK PATENT GMBH [DE], et al
- WO 2005039246 A1 20050428 - KONICA MINOLTA HOLDINGS INC [JP], et al
- US 2005069729 A1 20050331 - UEDA NORIKO [JP], et al
- JP 2004288381 A 20041014 - KONICA MINOLTA HOLDINGS INC
- EP 1205527 A1 20020515 - IDEMITSU KOSAN CO [JP]
- WO 2008086851 A1 20080724 - MERCK PATENT GMBH [DE], et al
- US 2009134784 A1 20090528 - LIN CHUN [US], et al
- WO 2007063754 A1 20070607 - NIPPON STEEL CHEMICAL CO [JP], et al
- WO 2008056746 A1 20080515 - NIPPON STEEL CHEMICAL CO [JP], et al
- WO 2010136109 A1 20101202 - MERCK PATENT GMBH [DE], et al
- WO 2011000455 A1 20110106 - MERCK PATENT GMBH [DE], et al
- EP 1617710 A1 20060118 - KONICA MINOLTA HOLDINGS INC [JP]
- EP 1617711 A1 20060118 - KONICA MINOLTA HOLDINGS INC [JP]
- EP 1731584 A1 20061213 - KONICA MINOLTA HOLDINGS INC [JP]
- JP 2005347160 A 20051215 - KONICA MINOLTA HOLDINGS INC
- WO 2007137725 A1 20071206 - MERCK PATENT GMBH [DE], et al
- WO 2005111172 A2 20051124 - COVION ORGANIC SEMICONDUCTORS [DE], et al
- WO 2006117052 A1 20061109 - MERCK PATENT GMBH [DE], et al
- WO 2010054729 A2 20100520 - MERCK PATENT GMBH [DE], et al
- WO 2010054730 A1 20100520 - MERCK PATENT GMBH [DE], et al
- WO 2010015306 A1 20100211 - MERCK PATENT GMBH [DE], et al
- EP 0652273 A1 19950510 - SHINKO ELECTRIC IND CO [JP]
- WO 2009062578 A1 20090522 - MERCK PATENT GMBH [DE], et al
- WO 2009148015 A1 20091210 - IDEMITSU KOSAN CO [JP], et al
- US 2009136779 A1 20090528 - CHENG CHIEN-HONG [TW], et al
- WO 2010050778 A1 20100506 - GRACEL DISPLAY INC [KR], et al
- WO 2011042107 A2 20110414 - MERCK PATENT GMBH [DE], et al
- WO 2011088877 A1 20110728 - MERCK PATENT GMBH [DE], et al
- WO 2010108579 A1 20100930 - MERCK PATENT GMBH [DE], et al
- M. S. ARNOLD ET AL., APPL. PHYS. LETT., vol. 92, 2008, pages 053301

Citation (search report)

- [XD] WO 2013100464 A1 20130704 - CHEIL IND INC [KR]
- [A] US 2013256645 A1 20131003 - MIN SOO-HYUN [KR], et al

Designated contracting state (EPC)

AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR

DOCDB simple family (publication)

WO 2015090504 A2 20150625; WO 2015090504 A3 20150820; CN 105829292 A 20160803; CN 112851613 A 20210528;
 CN 112898254 A 20210604; EP 3083880 A2 20161026; EP 3083880 B1 20200401; EP 3708634 A1 20200916; JP 2017507901 A 20170323;
 JP 2019202998 A 20191128; JP 6542228 B2 20190710; JP 6790178 B2 20201125; KR 102388354 B1 20220419; KR 102492870 B1 20230130;
 KR 102618668 B1 20231227; KR 20160095165 A 20160810; KR 20220054693 A 20220503; KR 20230020561 A 20230210;
 KR 20240005158 A 20240111; TW 201538489 A 20151016; TW 202012383 A 20200401; TW 202108563 A 20210301; TW I667231 B 20190801;
 TW I709556 B 20201111; TW I776260 B 20220901; US 10777750 B2 20200915; US 11545634 B2 20230103; US 2016308147 A1 20161020;
 US 2020266364 A1 20200820; US 2023126850 A1 20230427

DOCDB simple family (application)

EP 2014003120 W 20141121; CN 201480068667 A 20141121; CN 202110117287 A 20141121; CN 202110121524 A 20141121;
 EP 14801936 A 20141121; EP 20165606 A 20141121; JP 2016541141 A 20141121; JP 2019108797 A 20190611; KR 20167019517 A 20141121;
 KR 20227012507 A 20141121; KR 20237002821 A 20141121; KR 20237044332 A 20141121; TW 103143914 A 20141216;
 TW 108117179 A 20141216; TW 109137119 A 20141216; US 201415105759 A 20141121; US 202016869274 A 20200507;
 US 202218079430 A 20221212